

**REMARKS**Regarding the Status of the Claims:

Claims 1 – 8 are pending.

Claim 1 is amended to be more like its original language while not changing its originally intended scope.

Claims 9 – 18 have been withdrawn from consideration, but are amended to be method claims. Thus, their rejoinder is respectfully requested.

Regarding the Restriction Requirement:

As stated in the telephone conversation of May 21, 2008, applicant provisionally elects Group I, claims 1 – 8, drawn to a method without traverse.

Regarding the Claim Rejections:

The Office action rejects:

- I. claim 1 under 35 U.S.C §103(a) over US 6,004,504 to Vallomy (hereinafter, “Vallomy-504”) and RU 2,082,763 (hereinafter, “RU-763”) [note: applicant assumes reference to US 6,005,504 on page 3 of the Office action was a typographical error];
- II. claims 2 – 5 under 35 U.S.C §103(a) over Vallomy-504, RU-763, and US 5,099,438 to Gulden, Jr. et al. (hereinafter, “Gulden”);
- III. claim 6 under 35 U.S.C §103(a) over Vallomy-504, RU-763, Gulden, US 4,564,388 to Vallomy (hereinafter, “Vallomy-388”), US 3,772,000 to Hyde (hereinafter, “Hyde”), and US 4,010,026 to Engledow (hereinafter, “Engledow”); and
- IV. claim 8 under 35 U.S.C §103(a) over Vallomy-504, RU-763, Gulden and US 4,679,773 to Wunsche (hereinafter, “Wunsche”).

Regarding Rejection I:

Applicant respectfully submits the rejection of claim 1 under 35 U.S.C §103(a) over Vallomy '504 and RU '763 should be withdrawn.

As acknowledged on page 4 of the Office action, Vallomy '504 does not disclose any of the steps of the claimed method. Indeed, Vallomy '504 relates to controlling bath level in a steelmaking process. As explained by Vallomy '504 in column 1, line 66 – column 2, line 7, controlling the bath level is important to maintain a continuous steelmaking process, helps insure immediate melting of a metallic charge, and “allows for proper placement of sensing equipment and material injectors in relation to the steel bath level.”

Since Vallomy-504 does not disclose any of the steps of the claimed method, the Office action relies entirely on RU '763 to teach the steps of the claimed method. The claimed method comprises the steps of:

- weighing the furnace at least periodically to detect the quantity of discharged scrap present inside the furnace itself;
- detecting the temperature of the liquid bath inside the furnace at least periodically, and
- at least the discharge delivery of the scrap inside the furnace is detected by weighing and is regulated to maintain the temperature of the liquid bath around a pre-determined value.

The cited portions of RU '763 do not disclose any of these steps. RU '763 merely discloses weighing scrap materials discharged into a furnace in order to regulate the rate of loading, depending on a measurement of the active power delivered to the furnace. The cited portions of RU '763 do not describe weighing the furnace for any purpose, let alone to detect the quantity of discharged scrap present inside the furnace itself. The cited portions of RU '763 do not describe detecting the temperature of the liquid bath inside the furnace. The cited portions of RU '763 do not describe at least the discharge delivery of the scrap inside the furnace is detected by weighing and is regulated to maintain the temperature of the liquid bath around a pre-determined value.

Since the proposed combination would not include any of the steps required by the claimed method, applicant respectfully submits that the proposed combination does not establish a *prima facie* case of obviousness.

As explained in detail in the specification, for example on page 11, from line 28, to page 12, from line 9, in the present invention a direct link is established between the speed at which the scrap or other material is introduced into the furnace, and the temperature of the liquid bath, "so as to keep in any case the temperature of the bath in close proximity with a preset value" (page 11, lines 30-31).

As further explained on page 12, lines 3-9 with the two possible options, if the temperature of the bath lowers, this means that the loading speed of discharge of the scrap (of course colder than the liquid bath inside the furnace) is too high (in other words an excessive amount of scrap, detected by weight, is being discharged into the furnace); if the temperature of the bath increases, this means the loading speed is too low and a greater amount (detected by weight) of scrap can be discharged into the furnace.

In both cases, the purpose of the present method is to maintain always the temperature of the liquid bath around a pre-set value by regulating the quantity of scrap discharged; however, to regulate the scrap discharged, the present method provides to weigh at least periodically the furnace during the discharging, to know the amount of the scrap discharged.

It is respectfully submitted the two prior art documents cited in the Office Action neither disclose nor suggest the above features.

In fact, US '504 discloses the use of a charge velocity detector and of a charge mass detector, to optimize the feed rate of charge material, the steel bath level, the position of probes and lances inside the bath, and it measures the temperature of the steel bath.

However, US '504 neither weighs the furnace periodically to know with precision the amount of scrap discharged inside the furnace, nor uses the information related to the scrap discharged to regulate the discharging speed of the scrap with the aim of maintaining the temperature of the steel bath around a pre-set value, as claimed in present claim 1.

US '504 discloses the use of a temperature probe inserted in a position inside the bath, but neither discloses nor suggests that this measure is used to condition the delivery speed of the scrap inside the furnace.

RU '763 cannot solve the deficiencies of US '504, since it only teaches to weight the scrap materials discharged into the furnace in order to regulate the rate of loading depending on a measurement of the active power delivered to the furnace.

Thus, it is respectfully submitted the teaching of RU '763 cannot be combined with the teaching of US '504 to obtain the present invention as claimed.

Neither of the two documents mentions the main purpose of the present invention, i.e., to maintain the temperature of the liquid bath inside of the furnace around a pre-set value.

Moreover, although the two documents disclose some kind of control of the amount of the scrap discharged into the furnace, neither document mentions nor suggests the use of the information about the discharged scrap to maintain the temperature of the liquid bath around a predetermined value.

#### Regarding Rejection II:

Applicant respectfully submits the rejection of claims 2 – 5 under 35 U.S.C §103(a) over Vallomy '504, RU-763, and Gulden should be withdrawn. The additional reference is cited only with regard to features of dependent claims 2 – 5, and does not cure the deficiencies discussed above with regard to Rejection I. Thus, applicant respectfully submits the proposed combination does not establish a *prima facie* case of obviousness.

#### Regarding Rejection III:

Applicant respectfully submits the rejection of claim 6 under 35 U.S.C §103(a) over Vallomy '504, RU '763, Gulden, Vallomy '388, Hyde, and Engledow should be withdrawn. The additional references are cited only with regard to features of dependent claim 6, and do not cure the deficiencies discussed above with regard to Rejection I. Thus, applicant respectfully submits the proposed combination does not establish a *prima facie* case of obviousness.

Regarding Rejection IV:

Applicant respectfully submits the rejection of claim 8 under 35 U.S.C §103(a) over Vallomy '504, RU '763, Gulden and Wunsche should be withdrawn. The additional references are cited only with regard to features of dependent claim 8, and do not cure the deficiencies discussed above with regard to Rejection I. Thus, applicant respectfully submits the proposed combination does not establish a *prima facie* case of obviousness.

In Conclusion:

The present application is in condition for allowance. Applicant requests favorable action in this matter. To facilitate the resolution of any issues or questions presented by this paper, the Examiner is welcome to contact the undersigned by phone to further the discussion.

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